(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
31 July 2003 (31.07.2003)

PCT

(10) International Publication Number
WO 03/063525 A1

(51) International Patent Classification[7]: H04Q 7/22

(21) International Application Number: PCT/IE03/00007

(22) International Filing Date: 22 January 2003 (22.01.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/349,383 22 January 2002 (22.01.2002) US

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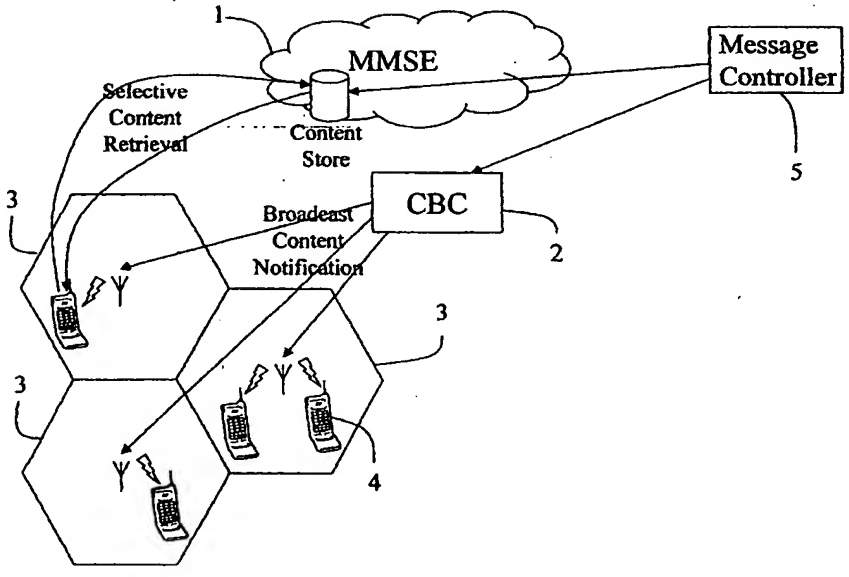
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: MULTI-MEDIA MESSAGING



(57) Abstract: A multi-media message is to be routed to multiple recipients (4) in cells (3). A message controller (5) sends the content to an MMSC (1) and instructions for notification to a CBC (2). The CBC (2) broadcasts a notification string on a reserved CBC channel, in which an identifier identifies the sender application. Mobile devices (4) receive the notification string and each uses the identifier to generate a prompt for the user. The user indicates that he or she wishes to pull down the content, upon which the device (4) accesses the MMSC (1) and pulls it down.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

"Multi-media Messaging"

INTRODUCTION

Field of the Invention

The invention relates to transmission of multi-media messages using a service such as the MMS service in which content is temporarily stored, the recipient is notified, and the recipient then pulls the content.

Prior Art Discussion

MMS as specified in the standards provides for users of mobile devices to send a multi-media message to a recipient. The message may, for example incorporate a photograph. The message is sent initially to a store/forward/download multi-media service centre (MMSC), which in turn transmits a notification to the recipient. The recipient then accesses the MMSC with very simple user interfacing and retrieves ("pulls") the actual message.

While this system is quite effective for many situations, there are situations where it is desired to send messages to a wide range of recipients. In this case, the existing mechanisms are complex and ineffective.

PCT Patent Specification No. WO01/22708A1 describes an approach to addressing the problem of communication of messages (voice or text) to multiple recipients in mobile networks. In this approach either short message service (SMS) or email are used to send a messaging service address code and a temporary access code to the intended recipients. The intended recipients then access the selected message by contacting the voice messaging service and entering the temporary access code. This

approach involves use of what is essentially a point-to-point service, namely SMS or email, to transmit the codes. This appears to be time-consuming and complex.

The invention is therefore directed towards providing for simpler communication of multi-media messages to multiple recipients.

SUMMARY OF THE INVENTION

According to the invention, there is provided a method of transmitting a multi-media message to a plurality of intended recipients in a mobile network by transmitting a notification to the recipients and the recipients accessing a multi-media service centre and pulling message content, wherein the notifications are broadcast using a mobile network broadcast service.

In one embodiment, the notifications are broadcast by a cell broadcast entity.

In another embodiment, the notifications are broadcast on a reserved cell broadcast channel.

In a further embodiment, the notifications include an identifier which associates the message with a sender or with a subject matter.

In one embodiment, each recipient device reads the identifier and generates a user output accordingly.

In another embodiment, the recipient device pulls the message content only upon receipt of a user instruction.

In another embodiment, each recipient device automatically pulls the content transparently to the user.

In a further embodiment, the notification string is a binary string.

In one embodiment, the message is initiated by a message controller receiving the message, and transmitting the content to the multi-media service centre and transmitting notification instructions to a broadcast entity.

In another embodiment, an application automatically generates the message to provide an information service to intended recipients, and transmits the message to the message controller.

In a further embodiment, an element in the mobile network automatically monitors device identifiers of recipient devices when pulling message content and uses this information to perform additional services.

In one embodiment, the method further comprises the step of an element choosing a broadcast area for the message.

In another embodiment, said element is the message controller.

In another aspect, the invention provides a multi-media message service centre comprising means for performing multi-media service centre operations of a method as defined above.

In another aspect, the invention provides a cell broadcast entity comprising means for performing cell broadcast entity operations of a method as defined above.

The invention also provides a message controller comprising means for performing message controller operations of a method as defined above.

In another aspect, the invention also provides a mobile device comprising means for performing recipient mobile device operations of a method as defined above.

DETAILED DESCRIPTION OF THE INVENTION

Brief Description of the Drawings

The invention will be more clearly understood from the following description of some embodiments thereof, given by way of example only with reference to the accompanying drawing in which:-

Fig. 1 is a schematic representation of elements and signals involved in transmission of multi-media messages in accordance with the invention.

Description of the Embodiments

Referring to Fig. 1 the following elements are illustrated.

1, multi-media service centre (MMSC);

2, cell broadcast centre (CBC);

3, mobile network cells, in which there are mobile devices 4; and

5, a message controller residing in the Internet.

The message controller 5 initiates implementation of a method for transmission of a message to multiple recipients in the mobile network cells 3. It interfaces with applications to receive the message content and instructions. While it is illustrated as a stand-alone entity, it may alternatively be incorporated in an MMSC 1, in a CBC 2, or in an application server.

The particular recipients are not known, however, it is known that they fall within a pool of possible recipients. This pool of possible recipients are mobile network

subscribers who subscribe to a particular "messaging" broadcast channel of the CBC 2. This channel is one of the "reserved" channels as specified in the CB standards.

The mobile devices of this pool of subscribers are each programmed to operate in one of the following modes:

(a) temporarily not tune into the messaging channel, or

(b) tune in with a user-option mode, or

(c) tune in with an automatic pull mode.

When the MMSC 1 receives the message from the controller 5 it stores the content. The message controller 5 generates a binary notification string in which an embedded identifier identifies the nature of the message. For example the identifier may associate the message with a particular sender person, a weather reporting application, or a financial reporting application. In general, the identifier associates the message with a sender and/or with a subject matter.

The CBC 2 broadcasts the notification string on the messaging channel. The broadcast area is dynamically selected according to the desired pool of potential recipients. For example, a particular geographical area may be selected. Thus, the pool of potential recipients is determined by the broadcast cell or cells 3 and by the set of subscribers "tuned" to the messaging CBC channel.

If a device 4 is in mode (a) above it ignores the notification string until mode (b) or (c) is activated. At some later time it may be activated by the user so that it operates in mode (b) or (c).

If the device 4 is in mode (b) it reads the identifier embedded in the notification string and determines from it the associated service and/or sender. It uses this information to generate a prompt for the user, such as:

"Would you like a weather forecast update MM message?", or

"Would you like to retrieve a message from Joe Bloggs?".

The user then inputs a Yes or No selection. If Yes, the device accesses the MMSC 1 using conventional MMS pull techniques and downloads the message.

If the device is in mode (c) it does not give the user an option, but instead automatically pulls the message content from the MMSC 1 and presents it to the user.

In one embodiment the MMSC 1 monitors the mobile device identifier as it pulls the content and uses this information in a manner authorised by the recipient user to perform appropriate billing and/or to offer additional services to the user. Thus, the user obtains a better service more closely related to his or her profile, and the network operator is in a position to provide more targeted services and to obtain additional revenue.

It will be appreciated that the invention allows senders to transmit messages to a wide range of recipients in a very simple manner. It achieves this without need for additional network elements for transport, essentially using existing CBC and MMSC hardware and channels. The fact that there is no need for point-to-point transmission of notifications is a major advantage. The network operator and the sender achieve the "best of both worlds" in the multiple device coverage of broadcast and the direct communication aspect of pulling of the content. Heretofore, CBC broadcast has not provided feedback to the operator of usage of channels because there has not been any interaction. On the other hand MMS has been limited by the need to individually notify each intended recipient in a point-to-point manner. Also, as described above the potential pool of recipients can be modified by choice of broadcast cell and by provision of devices tuned to the messaging broadcast channel.

The invention is not limited to the embodiments described but may be varied in construction and detail. For example, the broadcast system used may not be CBC, but instead a low-level broadcast scheme for device-to-base station interaction for monitoring device location. In this embodiment, all devices subscribing to the network operator are automatically "tuned", and so all are in the pool. Also, it is not essential that the devices have the option of modes (a), (b), or (c). For example, there may be no option for mode (c) in which user selection is required for all MM content pulls. It is also envisaged that the notification string may comprise text or other protocol instead of binary format. Further, the message controller may be incorporated in a sending application, or alternatively it may be incorporated in an MMSC or in a CBC.

Claims

1. A method of transmitting a multi-media message to a plurality of intended recipients in a mobile network by transmitting a notification to the recipients and the recipients accessing a multi-media service centre and pulling message content, wherein the notifications are broadcast using a mobile network broadcast service.

2. A method as claimed in claim 1, wherein the notifications are broadcast by a cell broadcast entity.

3. A method as claimed in claim 2, wherein the notifications are broadcast on a reserved cell broadcast channel.

4. A method as claimed in any preceding claim, wherein the notifications include an identifier which associates the message with a sender or with a subject matter.

5. A method as claimed in claim 4, wherein each recipient device reads the identifier and generates a user output accordingly.

6. A method as claimed in claim 5, wherein the recipient device pulls the message content only upon receipt of a user instruction.

7. A method as claimed in any of claims 1 to 5, wherein each recipient device automatically pulls the content transparently to the user.

8. A method as claimed in any preceding claim, wherein the notification string is a binary string.

9. A method as claimed in any preceding claim, wherein the message is initiated by a message controller receiving the message, and transmitting the content to the multi-media service centre and transmitting notification instructions to a broadcast entity.

10. A method as claimed in claim 9, wherein an application automatically generates the message to provide an information service to intended recipients, and transmits the message to the message controller.

11. A method as claimed in any preceding claim, wherein an element in the mobile network automatically monitors device identifiers of recipient devices when pulling message content and uses this information to perform additional services.

12. A method as claimed in any preceding claim, further comprising the step of an element choosing a broadcast area for the message.

13. A method as claimed in claim 12, wherein said element is the message controller.

14. A method substantially as described with reference to Fig. 1.

15. A multi-media message service centre comprising means for performing multi-media service centre operations of a method as claimed in any preceding claim.

16. A cell broadcast entity comprising means for performing cell broadcast entity operations of a method as claimed in any of claims 2 to 14.

17. A message controller comprising means for performing message controller operations of a method as claimed in any of claims 9 to 14.

18. A mobile device comprising means for performing recipient mobile device operations of a method as claimed in any of claims 1 to 14.

1/1

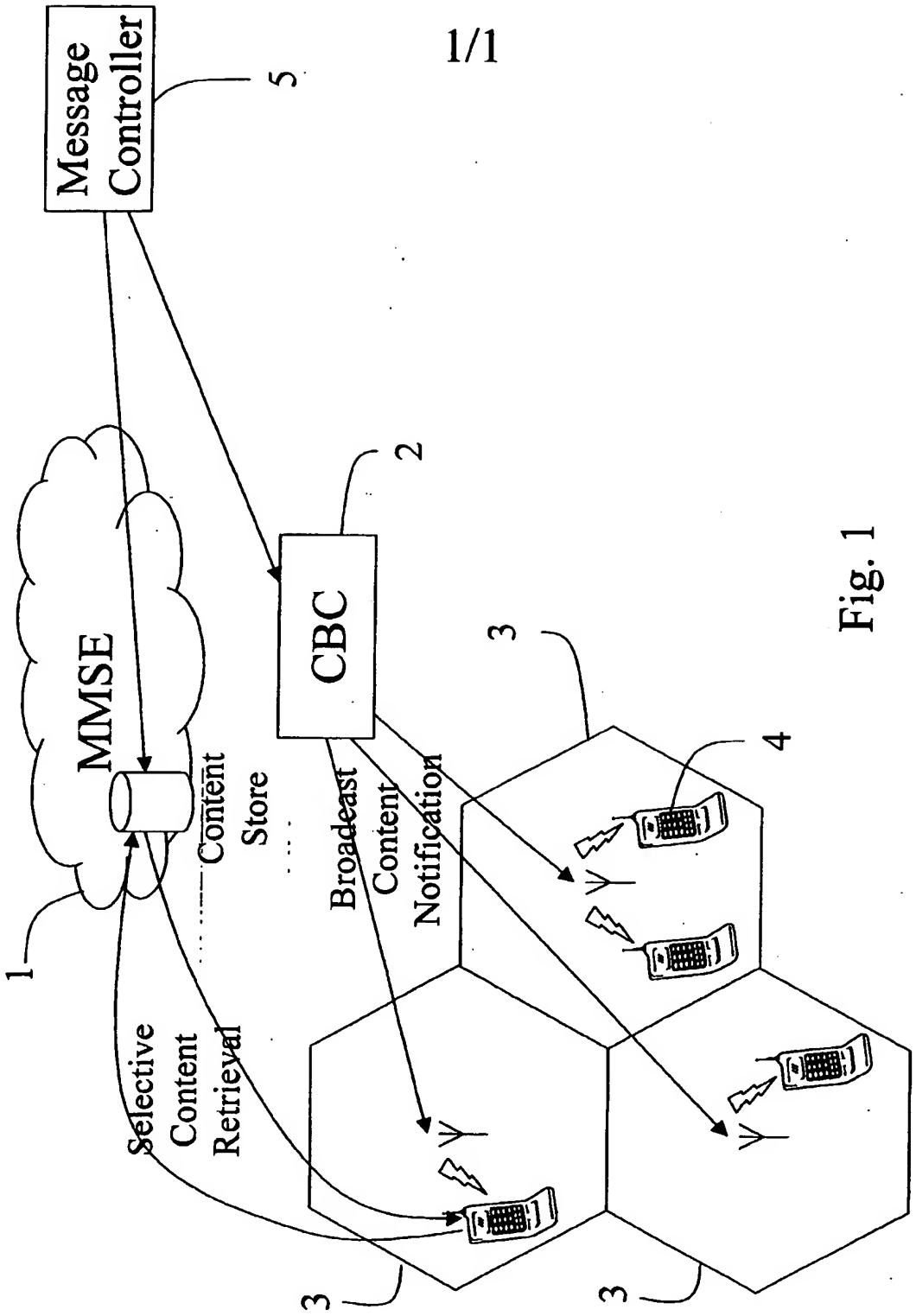
Message Controller
5
MMSE
CBC
2
1
Content Store
Broadcast Content Notification
Selective Content Retrieval
3
3
3
4

Fig. 1

INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/IE 03/00007

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 01 33782 A (NOKIA MOBILE PHONES LTD ;AHO OUTI (FI)) 10 May 2001 (2001-05-10) abstract page 3, line 20 -page 4, line 2 page 8, line 2 - line 30 page 10, line 25 -page 11, line 14 figures 2,4 — -/--	1-13, 15-18

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 March 2003	17/04/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Rabe, M

INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/IE 03/00007

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	BELKEIR N E ET AL: "Low cost algorithms for message delivery in dynamic multicast groups" INTERNATIONAL CONFERENCE ON DISTRIBUTED COMPUTING SYSTEMS. NEWPORT BEACH, JUNE 5 - 9, 1989, PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON DISTRIBUTED COMPUTING SYSTEMS, WASHINGTON, IEEE COMP. SOC. PRESS, US, vol. CONF. 9, 5 June 1989 (1989-06-05), pages 110-117, XP010016533 ISBN: 0-8186-1953-8 paragraph "Introduction"	1-13, 15-18
Y	GB 2 346 512 A (NIPPON ELECTRIC CO) 9 August 2000 (2000-08-09) abstract page 7, line 14 -page 9, line 19 figure 3	1-13, 15-18
A	US 2001/031641 A1 (SMITH RICHARD ET AL) 18 October 2001 (2001-10-18) paragraph '0129! - paragraph '0136!	1
A	WO 01 22708 A (NOKIA NETWORKS OY ;NOKIA INC (US)) 29 March 2001 (2001-03-29) cited in the application page 2, line 33 -page 3, line 26 figure 1	1

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 14

Claim 14 merely includes a reference to Figure 1.
According to Rule 6.2(a) PCT, references to the description and/or drawings are allowable only where the reference is absolutely necessary (cf. PCT Gazette -Section IV, S-07/1998, C-III, 4.10). Such is, however, not the case here.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

national application No.
PCT/IE 03/00007

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 14
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int onal Application No
PCT/IE 03/00007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0133782 A	10-05-2001	FI 992401 A	06-05-2001
		AU 1398501 A	14-05-2001
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		AU 6177400 A	24-04-2001
		WO 0122708 A1	29-03-2001